



RCRA, Superfund & EPCRA Hotline Training Module

Introduction to:

Containers
(40 CFR Parts 264/265, Subparts I; §261.7)

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CONTAINERS

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1. INTRODUCTION

Containers represent one of the most commonly used and diverse forms of hazardous waste storage. Compared to tanks or surface impoundments, containers are less expensive and generally less difficult to manage. Containers are also mobile, allowing an owner/operator to use only one unit for storage, transportation, and disposal. Prior to regulation under the Resource Conservation and Recovery Act (RCRA), however, containers were frequently mismanaged or abandoned. When the abandoned containers became weathered or corroded, the hazardous contents were released, posing a far-reaching danger to human health and the environment.

This module reviews two sets of regulatory requirements for containers: requirements that pertain to the management of hazardous waste containers, and regulations governing residues of hazardous waste in empty containers. The regulations covering management of hazardous waste stored in containers are found in 40 CFR Parts 264/265, Subpart I. These specific requirements must be met by the owners/operators of treatment, storage, and disposal facilities (TSDFs) and generators who manage hazardous waste in containers.

The regulations covering the management of container residues and the definition of when residues in containers are exempt from regulation are found at 40 CFR §261.7. These regulations set out procedures for establishing a container as "empty." Since empty containers no longer contain hazardous waste, these regulations are also used to determine when containers are no longer subject to the requirements of RCRA.

When you have completed this module you will be able to apply the appropriate regulations governing hazardous waste containers when assisting Hotline callers. Specifically, you will be able to:

- Find the definitions of "container" and "empty container," and provide examples and citations for each
- Provide an overview of the requirements for the design and operation of hazardous waste containers
- Explain the difference between the container standards set out in Part 264 and Part 265
- State the requirements for rendering a hazardous waste container "RCRA empty"
- Explain when container rinsate must be managed as a hazardous waste.

2. REGULATORY SUMMARY FOR MANAGEMENT OF CONTAINERS

Containers storing hazardous waste at permitted and interim status facilities are subject to the general facility standards under Parts 264/265, Subparts A through E, as well as the unit-specific requirements set out in Parts 264/265, Subpart I. See the training module entitled TSDFs for more information about the general facility standards. When EPA promulgated the unit-specific requirements for hazardous waste containers, the Agency emphasized that although mismanagement of containers has caused some of the worst contamination, relatively few regulations would be needed to eliminate most of these problems. These straightforward regulations are viewed simply as "good management practices."

The regulations for containers found under Parts 264/265, Subpart I, include provisions regarding design and operating requirements, inspections, and closure. These requirements are designed to ensure that the integrity of the container is not breached; thus the same standards apply regardless of whether the containers are used for treatment or storage.

Since the interim status standards (Part 265) are designed to regulate existing facilities until they can comply with the permitted standards (Part 264), certain portions of the container regulations for interim status facilities are less stringent than those for permitted facilities. Specifically, Part 265, Subpart I, regulations do not address requirements for secondary containment or closure as do the standards in Part 264, Subpart I. Therefore the discussions of these standards will only cite Part 264 standards.

The following is a summary of the regulations affecting containers used to store hazardous waste.

2.1 APPLICABILITY

Unless the container is specifically exempted from regulation under §§264.1 or 265.1, all containers storing hazardous waste must comply with the regulations found under Parts 264/265, Subpart I. Hazardous waste containers at generator sites must be in compliance with the Part 265 standards as well. A container is any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled (§260.10). This definition is intentionally broad to encompass all the different types of portable devices that may be used to handle hazardous waste. A container may be a 55-gallon drum made from steel or plastic, a large tanker truck, a railroad car, a small bucket, or a test tube.

Storage means holding hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere. Again, this definition is made intentionally broad to include any situation in which hazardous waste is held for any period of time.

2.2 DESIGN REQUIREMENTS

The regulations governing the design of a container storage area are intended to ensure that the waste will not escape the storage area. These regulations ensure that the owner/operator is using a functional container, and that the container will hold waste that is compatible with the container itself or other wastes in the container. In addition, the containers must be placed in a containment area designed to prevent releases from the containers from reaching the environment. The following sections detail these requirements.

CONDITION OF CONTAINER

Containers that are deteriorating (e.g., cracked, rusted) or leaking must not be used. Waste stored in defective containers must be transferred to containers in good condition or handled in another way that satisfies the requirements of Parts 264/265 (§§264/265.171).

COMPATIBILITY WITH WASTE

Sections 264/265.172 and 264/265.177 both regulate situations involving incompatible wastes. The term incompatible waste refers to a hazardous waste which is unsuitable for (1) placement in a container because it may cause corrosion or decay of the container or inner liner; or (2) commingling with another waste or material under uncontrolled conditions because it might produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mists, fumes or gases, or flammable fumes or gases (§260.10).

Containers used to store hazardous waste must be made of or lined with materials that will not react with and are otherwise compatible with the waste in the container (§§264/265.172). Incompatible wastes and materials must not be placed in the same container (§§264/265.177). This requirement includes unwashed containers that previously held an incompatible waste or material. Incompatible wastes or materials can only be mixed in a manner that will not cause an adverse reaction, such as an explosion or uncontrolled flammable fumes (§§264/265.17(b)).

Appendix V in Parts 264/265 provides a list of potentially incompatible wastes. The list is not intended to be exhaustive. Adequate analysis should be performed to avoid creating uncontrolled hazards such as heat generation, violent reaction, fire, explosion, and generation of flammable or toxic gases.

CONTAINMENT

As mentioned in the summary, the regulations for containment only apply to permitted facilities under Part 264, not facilities operating under interim status. In general, the interim status regulations are less comprehensive because some of the regulations for permitted facilities require the retrofit of equipment, which could place undue burden on the facilities. Therefore, only permitted container storage areas must have a secondary containment system (§264.175(a)). Secondary containment provides a backup system to prevent a release into the environment should primary containment (i.e., the container) fail. This usually consists of a poured concrete pad or other impervious base with curbing to prevent releases of hazardous waste into the environment and to allow drainage of any accumulated liquid to a sump, tank, or other container.

Storage areas holding containers with no free liquids are not required to have secondary containment systems (§264.175(c)). Free liquids are liquids which readily separate from the solid portion of a waste under ambient temperature and pressure (§260.10). The Agency requires use of the Paint Filter Liquids Test (PFT), Method 9095, to determine whether sludges or semisolids contain free liquids (Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA SW-846, provides information on test methods).

Technical Requirements

At a minimum, the secondary containment system must meet certain criteria designed to ensure that the waste will remain in the containment system until it is removed in a "timely" manner. Specifically, the containment system must meet the following requirements:

- The base must be free of cracks or gaps and must be sufficiently impervious to contain leaks, spills, and accumulated precipitation (§264.175(b)(1)).
- The base must be sloped or the system must be designed so that liquids resulting from releases can drain and be removed. This is not necessary if the container is elevated (e.g., on pallets) or otherwise protected from contacting accumulated liquids (§264.175(b)(2)).
- The secondary containment system must have the capacity to contain at least 10 percent of the volume of the containers or 100 percent of the volume of the largest container — whichever is greater. If containers hold no free liquids, they do not have to be considered in this calculation (§264.175(b)(3)).

- Stormwater run-on must be prevented from entering the system unless the collection system has sufficient capacity to contain any run-on entering the system in addition to the capacity requirements (§264.175(b)(4)).
- Any waste that has spilled or leaked into the secondary containment area or any accumulated precipitation must be removed in a timely manner (§264.175(b)(5)).

2.3 OPERATING REQUIREMENTS

Even the most well-designed storage areas can fail if the containers and the waste are not handled properly. When EPA promulgated the rules for container storage areas, the Agency believed that the following operating guidelines would curtail the bulk of container mismanagement in the United States. Note that although secondary containment is addressed under the design requirements, there are also specific requirements to maintain the secondary containment properly.

MANAGEMENT OF CONTAINERS

Under §§264/265.173, containers holding hazardous waste must always be closed during storage, except when waste is added or removed. In addition, containers must not be handled, opened, or stored in a manner which may cause them to leak.

IGNITABLE AND REACTIVE WASTES

Containers holding ignitable or reactive wastes must be located at least 15 meters (50 feet) from the facility's property line (§§264/265.176). This requirement is sometimes referred to as the buffer zone requirement, because it creates a zone of protection between waste storage and adjoining properties. The general facility standards of §§264/265.17(a) specify additional requirements for ignitable and reactive wastes.

2.4 INSPECTIONS

At least once a week, container storage areas must be visually inspected for leaking and deteriorating containers (§§264/265.174). Recordkeeping requirements for inspections are detailed in §§264/265.15(d). The owner/operator must record inspections in a log, including the date and time of the inspection, the name of the inspector, observations made, and the date and nature of any repairs. These records must be kept for a minimum of three years from the date of inspection.

2.5 CLOSURE

As mentioned in the summary, specific closure requirements for containers appear only in the regulations for permitted facilities. At closure, all hazardous waste and associated residues must be removed from the container storage area. Remaining containers, liners, bases, and soil contaminated with hazardous waste must be decontaminated or removed (§264.178).

Although no container closure requirements appear in the regulations under Part 265, Subpart I, the general closure standards of Part 265, Subpart G, are applicable (47 FR 2831; January 12, 1981). Section 265.114 requires that wastes be removed from storage facilities at closure and that structures and equipment be disposed of or decontaminated.

At closure, the owner or operator must determine whether any solid waste (e.g., residues) removed from the containment system is hazardous waste. If an owner/operator determines the solid waste is hazardous waste, he or she is considered the generator of the waste and must manage it in compliance with all applicable requirements of Parts 262 through 266.

2.6 SPECIAL ISSUES

Three additional issues specific to containers merit discussion.

F-LISTED DIOXIN-CONTAINING WASTE

Specific management standards for storing F-listed dioxin-containing waste (F020, F021, F022, F023, F026, and F027) in containers apply to both permitted and interim status facilities. Storage in fully permitted facilities is preferable due to the acutely hazardous nature of the waste. Permitted container storage areas holding F-listed dioxin-containing wastes must have a containment system as specified in §264.175(b), even if those containers contain no free liquids (§264.175(d)(1)).

Although EPA would prefer that dioxin-containing wastes be managed at permitted facilities because of their extreme toxicity, the Agency has been concerned about possible shortages in short-term management capacity. Therefore, certain types of interim status storage facilities may be able to provide adequate management in the short term. The Agency contends that interim status container storage facilities do provide sufficient control of these wastes to prevent a substantial environmental hazard or an unreasonable risk. Interim status container storage facilities accepting dioxin-containing wastes must meet most of the requirements for fully permitted container facilities while operating under interim status. These requirements include containment, management, and inspection of containers (§§265.171-.174).

AIR EMISSIONS STANDARDS

On December 6, 1994 (59 FR 62896), EPA published a final rule promulgating air emission standards for containers, tanks, and surface impoundments at treatment, storage, and disposal facilities, and large quantity generator sites. The rule will require hazardous waste containers to comply with Parts 264/265, Subpart CC, within specified timeframes. See the module entitled Air Emissions Standards for more details about the Subpart CC requirements.

ADDITION OF ABSORBENT MATERIAL TO CONTAINERS

Under §§264.1(g)(10) and 265.1(c)(13), the addition of absorbent material to waste in a container (as defined in §260.10) or the addition of waste to absorbent material in a container, provided that these actions occur at the time the waste is first placed in the container, does not constitute treatment requiring interim status or a permit. The absorbent treatment process must take place in a container with solid structural integrity, and the waste and the absorbent material must be compatible.

3. REGULATORY SUMMARY OF THE EMPTY CONTAINER REQUIREMENTS

The regulations at §261.7 define when hazardous waste residue in an empty container is exempt from regulation. These regulations set out the requirements for rendering a container or inner liner "empty." To distinguish between the usual meaning of the word "empty" and the strict regulatory definition, the phrase "RCRA empty" is sometimes used. Any hazardous waste remaining in either a RCRA empty container or inner liner is not subject to regulation under RCRA Subtitle C. EPA promulgated these regulations to give guidance to owners/operators on how to empty their containers so that the containers are no longer subject to regulation, even if some residues remain in the container. Therefore, these regulations allow an owner/operator to reuse containers or inner liners meeting the provisions of §261.7 since the container is no longer considered to hold hazardous waste.

3.1 REGULATORY STANDARDS

Throughout this section, there will be references to the term "inner liner." This term refers to a continuous layer of material placed inside a tank or container which protects the construction materials of the container from contact with the contained waste or reagents used to treat the waste (§260.10). The following is a summary of the standards for rendering a container or inner liner RCRA empty.

GASES

Containers holding compressed gases that are hazardous wastes are considered empty when the pressure in the container approaches atmospheric pressure (§261.7(b)(2)).

ACUTELY HAZARDOUS WASTE

A container or inner liner of a container holding acutely hazardous waste (i.e., all P-listed wastes and other hazardous wastes with the designated hazard code H) is empty when one of the following conditions is met:

- The container has an inner liner which prevents contact with the container and the liner is removed (§261.7(b)(3)(iii))
or
- The container has been triple rinsed with a solvent appropriate for removing the acutely hazardous waste (§261.7(b)(3)(i))
or
- When triple rinsing is inappropriate, an alternate method is used (§261.7(b)(3)(ii)).

To date, EPA has not defined triple rinsing in the regulations or in interpretative guidance. The rinsate is considered acutely hazardous waste according to the mixture rule; however, the act of triple rinsing is not considered treatment (45 FR 78528; November 25, 1980).

OTHER HAZARDOUS WASTE

A container or inner liner removed from a container holding nonacute hazardous waste as identified in Part 261, Subparts C and D, is empty when:

- All wastes have been removed using practices commonly employed industry-wide to remove wastes from containers or liners, such as pouring, pumping, aspirating, and draining (§261.7(b)(1)(i)) **and** no more than 2.5 cm (1 inch) of material remains in the container or liner (§261.7(b)(1)(ii))

or

- No more than 3 percent by weight of the container remains for containers with a capacity of 110 gallons or less, and no more than 0.3 percent by weight remains for containers with a capacity greater than 110 gallons (§261.7(b)(1)(iii)).

Common emptying methods might remove the liquid phase of the waste; however, solids or semisolids might adhere to the sides of the container. The definition of empty container therefore states that in addition to emptying the container using common practices, no more than 2.5 cm (1 in) of material may remain in the container for it to be considered empty. If common practices are not used to empty the container, then the weight determination must be used.

RESIDUES FROM EMPTY CONTAINERS

Residues remaining in a RCRA empty container are exempt from Subtitle C regulation. Likewise, residues removed from an empty container (i.e., removed after the container meets the regulatory definition of empty) are also exempt from Subtitle C requirements, including the requirements for determining hazardous waste characteristics. In contrast, residues removed from a container that is not RCRA empty or that result from rendering a container empty are fully subject to Subtitle C.

3.2 SPECIAL ISSUES: AEROSOL CANS

A recurring issue within the container and empty container regulations is the puncturing or venting of aerosol cans. The issue stems partly from the applicability of the empty container regulations to aerosol cans, and partly from the issue of whether the can itself is considered to be part of the waste.

In general, aerosol cans are capable of holding either compressed gas or liquid. If the aerosol can is holding a compressed gas, it is unclear whether the act of venting to render the can empty would constitute treatment. This question must be answered by the appropriate EPA Region or authorized state. When the aerosol can is holding a liquid, the applicability of the regulations depend on whether the can is being sent for scrap metal recycling or disposal. If the can is sent for scrap metal recycling, the can and its contents are exempt from regulation as a scrap metal under §261.6(a)(3)(iii). The act of emptying the can would be an exempt recycling activity under §261.6(c), and any residues from emptying the can would be regulated if they are listed or exhibit a characteristic of hazardous waste. If the can is sent for disposal, both the contents of the can and the can itself are subject to regulation. To dispose of the aerosol can as nonhazardous, the can must be RCRA empty according to §261.7, and the can itself must not qualify as a hazardous waste.

4. REVIEW EXERCISES

The exercises in this section are designed to help you check your knowledge of the material in this module. Use any reference materials you need to answer the questions. Provide complete citations. Write answers in paragraph form.

Your instructor will schedule a specific time and place to meet and go over the correct answers. Make sure you attend this Q&A session. Get a copy of the answers to keep with this module.

EXERCISE 1

A storage area houses containers of hazardous waste. Several of the containers are rusted and may be leaking. How would the facility owner or operator discover this? What should be done to remedy the situation?

EXERCISE 2

A 55-gallon drum contains less than 1 inch of an F-listed solvent waste. The generator sends this container to a drum reconditioner as empty. The reconditioner found that although the container held less than one inch of material, it could be and was emptied further by inverting the container and pouring out the waste. Was the container "empty" under CFR §261.7 when received by the reconditioner? Why or why not?

EXERCISE 3

May a facility use a container that held an alkaline cleaner to store a chemical cleaner? Why or why not?

EXERCISE 4

A 100-gallon barrel holding commercial grade Aldrin is depleted. What procedures must the user follow to "empty" the barrel per §261.7?

EXERCISE 5

Describe how a containment system for a permitted container storage area must be designed and operated. Please provide citations for your answer.